CLAIMS

What we claim is:

1. A surface covering such as a wall covering, floor covering, carpeting, or carpet tile, comprising: a primary carpet, and a rebond foam cushion fixed at a position below said primary carpet.

2. The invention as recited in claim 1, further comprising at least one adhesive layer of at least one adhesive material between said primary carpet and said rebond foam cushion.

3. The invention as recited in claim 1, further comprising a layer of reinforcing material disposed within a mass of adhesive material such that at least a portion of said mass of adhesive material extends away from at least one side of said layer of reinforcing material.

4. The invention as recited in claim 2, wherein the adhesive material comprises at least one of a thermoplastic and thermoset adhesive.

5. The invention as recited in claim 1, wherein the primary carpet is characterized by a face weight of about 12 - 60 oz/yd^2.

6. The invention as recited in claim 1, wherein the surface covering has a plurality of corners wherein each of said corners has a cup of about 3/16" or less and a curl of about 1/16" or less.

7. The invention as recited in claim 2, wherein the adhesive layer is present at a level of less than or equal to about 100 oz/yd^2.

8. The invention as recited in claim 2, wherein the adhesive layer is present at a level of about 36 – 90 oz/yd^2.

9. The invention as recited in claim 1, wherein the rebond foam cushion is characterized by a density of about 25 lbs. per cubic foot or less.

10. The invention as recited in claim 1, wherein the rebond foam cushion is characterized by a density of about 9 lbs. per cubic foot or less.

11. The invention as recited in claim 1, wherein the rebond foam cushion is characterized by an uncompressed chip size of about 25 mm or less.

12. The invention as recited in claim 11, wherein the uncompressed chip size is about 12 mm or less.

13. The invention as recited in claim 11, wherein the uncompressed chip size is about 7 mm or less.

14. The invention as recited in claim 1, wherein the rebond foam is characterized by a binder quantity of about 25% or less.

15. The invention as recited in claim 14, wherein the binder content is about 15% or less.

16. The invention as recited in claim 14, wherein the binder content is about 10% or less.

17. The invention as recited in claim 2, wherein the adhesive material comprises a hot melt adhesive.

18. The invention as recited in claim 1, wherein the primary carpet is characterized by a face weight of less than or equal to about 55 oz/yd^2.

19. The invention as recited in claim 17, wherein the hot melt adhesive is present at a level of about 36 – 50 oz/yd^2.

20. The invention as recited in claim 2, wherein the adhesive material comprises a polyolefin based thermoplastic hot melt adhesive.

21. The invention as recited in claim 1, wherein the primary carpet is at least one of a tufted, bonded, flocked, needle punched, and woven carpet.

22. The invention as recited in claim 1, wherein the rebond foam cushion is characterized by a thickness of about 25 mm or less.

23. The invention as recited in claim 22, wherein the foam thickness is about 12 mm or less.

24. The invention as recited in claim 22, wherein the foam thickness is about 4 mm or less.

25. The invention as recited in claim 2, wherein the adhesive material comprises a polyurethane thermoset adhesive.

26. The invention as recited in claim 1, wherein the rebond foam cushion includes a backing material bonded to one surface thereof.

27. The invention as recited in claim 1, wherein the primary carpet is a tufted carpet including pile yarn, primary backing, and a pre-coat adhesive.

28. The invention as recited in claim 1, wherein the primary carpet is a tufted carpet including pile yarn and a primary backing.

29. The invention as recited in claim 1, wherein the primary carpet is a bonded carpet including pile yarn and a backing material.

30. The invention as recited in claim 3, wherein said layer of reinforcing material comprises at least one of a porous scrim, woven, and non-woven material.

31. The invention as recited in claim 3, wherein said reinforcement material is formed of fiberglass.

32. The invention as recited in claim 3, wherein said reinforcement material comprises a porous textile structure.

33. The invention as recited in claim 3, wherein said reinforcement material consists essentially of polyester.

34.. The invention as recited in claim 3, wherein said layer of reinforcing material comprises a plurality of glass fibers.

35. The invention as recited in claim 3, wherein said layer of reinforcing material comprises a plurality of polyester fibers.

36. The invention as recited in claim 3, wherein said mass of adhesive material substantially permeates and covers the layer of reinforcing material and extends in bonding relation between said primary carpet and said rebond foam cushion such that said primary carpet and said rebond foam cushion are adhesively bonded to one another by said mass of adhesive material.

37. The invention as recited in claim 3, wherein said primary carpet is a tufted carpet and wherein said mass of adhesive material extends between said rebond foam cushion and the underside of said primary carpet.

38. The invention as recited in claim 3, wherein said primary carpet is a bonded carpet and wherein said mass of adhesive material extends between said rebond foam cushion and the underside of said primary carpet fabric.

39. The invention as recited in claim 3, wherein said mass of adhesive material substantially permeates and covers the layer of reinforcing material and extends in bonding relation between said primary carpet and said rebond foam cushion such that said primary carpet and said rebond foam cushion are adhesively bonded to one another by said mass of adhesive material and wherein a layer of textile backing material is bonded to said rebond foam cushion across the surface of said rebond foam cushion facing away from said adhesive material.

40. The invention as recited in claim 1, wherein said rebond foam cushion is characterized by a density of about 6 to 12 lbs. per cubic foot.

41. A surface covering such as a wall covering, floor covering, carpeting, or carpet tile, comprising: a primary carpet, a polyurethane rebond foam cushion disposed at a position below said primary carpet, a mass of adhesive material disposed in bonding relation between said primary carpet and said rebond foam cushion and a layer of reinforcing material disposed between said primary carpet and rebond foam cushion such that at least a portion of said mass of adhesive material extends away from at least one side of said layer of reinforcing material.

42. The invention as recited in claim 41, wherein the rebond foam cushion is characterized by a density of about 25 lbs. per cubic foot or less.

43. The invention as recited in claim 42, wherein the primary carpet is characterized by a face weight of less than or equal to about 45 oz/yd^2.

44. The invention as recited in claim 41, wherein the adhesive material is selected from at least one of thermoplastic and thermoset adhesives.

45. The invention as recited in claim 41, wherein the surface covering is at least one of a carpet tile, attached cushion broadloom carpet, and roll product.

46. The invention as recited in claim 41, wherein the polyurethane rebond foam cushion comprises at most 25% polyurethane binder and at least 50% polyurethane foam chips.

47. The invention as recited in claim 41, wherein the polyurethane rebond foam cushion has a density of about 6 to 12 lb./cu. ft.

48. The invention as recited in claim 41, wherein the primary carpet is a tufted carpet including pile yarn and a primary backing.

49. The invention as recited in claim 41, wherein a textile backing material is disposed across the underside of said polyurethane rebond foam cushion.

50. A method of forming a surface covering such as a carpet tile or carpet composite comprising the steps of: bonding at least one layer of rebond foam to the underside of a primary carpet fabric.

51. The method as recited in claim 50, further comprising the steps of bonding a reinforcement material between said primary carpet and rebond foam layer.

52. The method as recited in claim 50, wherein said rebond foam is bonded to said carpet by at least one adhesive.

53. The method as recited in claim 50, wherein said rebond foam is bonded to said carpet by lamination.

54. A surface covering produced by the method of claim 50.

55. A method of forming a cushion backed carpet composite comprising the steps of : bonding a layer of rebond foam to the base of a primary carpet fabric with a layer of reinforcement material therebetween.

56. The method as recited in claim 54, wherein said rebond foam is bonded to said primary carpet by at least one adhesive.

57. A carpet composite produced by the method according to claim 55.

58. A dimensionally stable cushioned carpet tile suitable for disposition as discrete modular units across a flooring surface, the carpet tile comprising:

a primary carpet fabric having a pile side and a primary base with a plurality of pile forming yarns projecting outwardly from the pile side;

a rebond foam cushion layer disposed at a position below the primary carpet fabric; and

a bridging composite extending in bonding relation substantially between the primary base and an upper side of the rebond foam cushion layer wherein the bridging composite consists essentially of a layer of stabilizing material having a first side and a second side, a first layer of at least one resilient adhesive extending away from the first side of the stabilizing material into contacting relation with the primary base and a second layer of at least one resilient adhesive extending away from the second side of the layer of stabilizing material into contacting relation with the upper side of the rebond foam cushion layer such that the layer of stabilizing material is bonded between the first and second layers of resilient adhesive at a position between the primary base and the rebond foam cushion layer.

59. The invention as recited in claim 58, wherein the primary carpet fabric is a tufted carpet and wherein the primary base comprises a primary backing and a layer of adhesive pre-coat extending across the underside of the primary backing.

60. The invention as recited in claim 59, wherein the adhesive pre-coat comprises at least one of a latex and hot melt adhesive.

61. The invention as recited in claim 60, wherein the hot melt adhesive is bitumen based hot melt adhesive.

62. The invention as recited in claim 60, wherein the hot melt adhesive is a polyolefin based hot melt adhesive.

63. The invention as recited in claim 58, wherein the resilient adhesive is at least one of a thermoset and thermoplastic.

64. The invention as recited in claim 58, wherein the primary carpet fabric is a bonded carpet.

65. The invention as recited in claim 58, wherein the rebond foam cushion layer comprises polyurethane rebond foam characterized by a density of about 5 to 25 lbs. per cubic foot.

66. The invention as recited in claim 58, wherein the rebond foam cushion layer comprises polyurethane rebond foam characterized by a density of about 5 to 12 lbs. per cubic foot.

67. The invention as recited in claim 58, wherein the first layer of at least one resilient adhesive comprises a thermoplastic adhesive.

68. The invention as recited in claim 67, wherein said adhesive is bitumen based hot melt adhesive.

69. The invention as recited in claim 67, wherein said adhesive is a polyolefin based hot melt adhesive.

70. The invention as recited in claim 67, wherein said first layer of resilient adhesive is a thermoset adhesive.

71. The invention as recited in claim 58, wherein the primary base comprises a primary backing and a layer of latex adhesive pre-coat extending across the underside of the primary backing.

72. The invention as recited in claim 58, wherein the primary base comprises a primary backing and a layer of hot melt adhesive pre-coat extending across the underside of the primary backing.

73. The invention as recited in claim 58, wherein the second layer of at least one resilient adhesive comprises a hot melt adhesive.

74. The invention as recited in claim 73, wherein said hot melt adhesive is bitumen based hot melt adhesive.

75. The invention as recited in claim 73, wherein said hot melt adhesive is polyolefin based hot melt adhesive.

76. The invention as recited in claim 73, wherein said second layer of resilient adhesive is a thermoset adhesive.

77. The invention as recited in claim 58, wherein the combined mass of the first layer of at least one resilient adhesive and the second layer of at least one resilient adhesive is not greater than about 100 ounces per square yard.

78. The invention as recited in claim 58, wherein the stabilizing material comprises a sheet of non-woven fiber glass.

79. The invention as recited in claim 58, wherein the first layer of at least one resilient adhesive comprises a hot melt adhesive and the second layer of at least one resilient adhesive comprises a hot melt adhesive.

80. The invention as recited in claim 79, wherein the stabilizing material substantially separates the first layer of at least one resilient adhesive from the second layer of at least one resilient adhesive.

81. The invention as recited in claim 58, further comprising a backing structure disposed across the lower side of the rebond foam cushion layer.

82. The invention as recited in claim 81, wherein the backing structure comprises a multi-component composite.

83. The invention as recited in claim 82, wherein said multi-component composite comprises a layer of adhesive disposed adjacent the lower side of the rebond foam cushion layer.

84. The invention as recited in claim 83, wherein said layer of adhesive disposed adjacent the lower side of the rebond foam cushion layer is present at a level of not greater than about 40 ounces per square yard.

85. The invention as recited in claim 81, wherein said backing structure comprises a multi-component composite including a quick release backing.

86. A process for producing a carpet composite comprising the steps of:
modifying a rebond foam pad of approximately 5-25 pounds/cubic foot density to have a respective non-woven material bonded to each of the upper and lower surfaces thereof and with the composite rebond pad having a thickness of approximately .25 inch or less, slitting the composite rebond pad in half, producing two foam backings, each approximately .125 inch thick or less with a non-woven material attached to one surface, and bonding at least one of the foam backings using an adhesive to the back of at least one of a tufted carpet and a bonded carpet.

87. A carpet composite formed by the process of claim 86.

88. A carpet tile comprising a carpet layer and a backing attached thereto and having at least one layer comprised of compressible particles bonded together.

89. The carpet tile as recited in claim 88, wherein said layer comprised of compressible particles bonded together has an internal tear strength of at least 3 lbs.

90. The carpet tile as recited in claim 88, wherein the layer of compressible particles bonded together is a compressed particle foam and has a compressibility of less than 100% of the foam thickness at 40 psi.

91. The carpet tile as recited in claim 88, wherein said carpet tile has an appearance retention rating of at least 4.0 after 4,000 cycles.

92. The carpet tile as recited in claim 91, having an appearance retention rating of at least 3 after 12,000 cycles.

93. The carpet tile as recited in claim 88, wherein said layer comprised of compressible particles bonded together is at least one of a cut, slit and peeled foam.

94. The carpet tile as recited in claim 88, wherein said layer has a recycled content of at least 85%.

95. The carpet tile as recited in claim 88, wherein said layer comprised of compressible particles bonded together is an open celled foam comprised of open celled foam particles bonded together.

96. The carpet tile as recited in claim 95, wherein the open celled foam is comprised of foamed polyurethane.

97. The carpet tile as recited in claim 88, wherein said particles bonded together have an average uncompressed chip size of 25 mm or less.

98. The carpet tile as recited in claim 88, wherein said layer comprised of compressible particles bonded together has a density of $\leq$ 25 lbs/ft^3 .

99. The carpet tile as recited in claim 88, wherein said layer has a recycled content of at least 50%.

100. The carpet tile as recited in claim 88, having a hexapod rating >2.0 at 12,000 cycles.

101. The carpet tile as recited in claim 88, wherein said layer comprised of compressible particles bonded together is one layer of a hot melt laminated carpet backing.

102. The carpet tile as recited in Claim 88, wherein said layer comprised of compressible particles bonded together is one layer of a flame laminated carpet backing.

103. The carpet tile as recited in claim 88, having an initial Gmax of less than 125.

104. The carpet tile as recited in claim 88, having a cushion weight of less than 32 oz/yd^2 and an initial Gmax less than 125.

105. The carpet tile as recited in claim 88, wherein the layer of compressible particles bonded together has at least one of a honey-combed, reticulated, and skeletal open cell structure.

106. The carpet tile as recited in claim 88, wherein the layer of compressible particles bonded together has a structure of randomly placed particles bonded together in a compressed state.

107. The carpet tile as recited in claim 88, wherein said layer of compressible particles bonded together is substantially free of any filler.

108. The carpet tile as recited in claim 88, wherein said compressible particles of said layer of compressible particles bonded together are substantially 100% recycled content.

109. The carpet tile as recited in claim 88, wherein the compressible particles are bonded together with an adhesive.

110. The carpet tile as recited in claim 109, wherein said adhesive contains at least one additive, agent or compound selected from flame retardant, anti-bacterial, color, anti-microbial, anti-fungal, conductive, anti-static, fibers, filler, recycled materials, and combinations thereof.

111. The carpet tile as recited in claim 88, wherein the compressible particles are bonded together in a compressed state.

112. The carpet tile as recited in claim 88, wherein said tile includes a plurality of layers of compressible particles bonded together.

113. The carpet tile as recited in claim 88, wherein said layer of compressible particles bonded together has at least one lateral surface which is cut, peeled, or slit.

114. The carpet tile as recited in claim 88, wherein the carpet layer includes at least one of woven, tufted, or bonded carpet.

115. The carpet tile as recited in claim 88, wherein said layer of compressible particles bonded together has air permeability.

116. The carpet tile as recited in claim 88, wherein the backing is a multilayer backing.

117. The carpet tile as recited in claim 88, wherein the backing includes a stabilizing layer.

118. The carpet tile as recited in claim 88, wherein the foam layer has a thickness of less than 8 mm.

119. The carpet tile as recited in claim 88, wherein the tile has an overall height of less than 10 mm.

120. The carpet tile as recited in claim 88, having a caster chair rating of >2.3.

121. The carpet tile as recited in claim 88, having an EN 1307 rating of >2.

122. The carpet tile as recited in claim 88, having a Herzog walking comfort rating for contract use (DIN 54327) of >0.70.

123. A cushion back carpet tile comprising a carpet layer and a cushion back attached thereto and having at least one layer comprised of preformed foamed polyurethane particles bonded together.

124. The cushion back carpet tile as recited in claim 123, wherein said layer comprised of foamed polyurethane particles bonded together has an internal tear strength of at least 3 lbs.

125. The cushion back carpet tile as recited in claim 123, wherein said layer comprised of foamed polyurethane particles bonded together has a thickness of about 2 to 20 mm.

126. The cushion back carpet tile as recited in claim 123, wherein said layer comprised of foamed polyurethane particles bonded together has a compressibility of less than 100% at 40 psi.

127. The cushion back carpet tile as recited in claim 123, wherein said tile has an appearance retention rating of at least 4 at 4,000 cycles.

128. The cushion back carpet tile as recited in claim 123, wherein said tile has an appearance retention rating of at least 3 at 12,000 cycles.

129. A foam backed carpet tile with slit or peeled foam.

130. A foam backed carpet tile with open celled foam comprised of foamed polyurethane particles bonded together.

131. The foam backed carpet tile of claim 130 with an average uncompressed particle size of 15 mm or less.

132. A foam backed carpet tile with a backing of bonded chips of resilient material attached to a textile face and a backing density of $\leq$ 14 lbs/ft^3 .

133. A foam backed carpet tile with a flame laminated foam backing.

134. A foam backed carpet tile with a backing of bonded chips of resilient material attached to a textile face and an initial Gmax of less than 125.

135. The cushion backed carpet tile of claim 134 with a cushion weight of less than 25 lbs. per cubic foot.

136. A cushion backed carpet tile with a carpet layer and a skeletal structured foam cushion.

137. A cushion backed carpet tile including a carpet layer and a backing layer with a total backing layer weight of less than 50 oz/yd^2.

138. A carpet tile comprising a carpet layer and a backing attached thereto and having at least one layer comprised of foamed open cell particles bonded together.

139. A carpet tile with a cushion weight of less than 25 oz/yd^2 and an initial Gmax of less than 125.

140. A carpet tile comprising a carpet layer, a stabilizing layer, and a backing wherein at least one of said stabilizing layer and backing have at least one layer comprised of preformed compressible particles bonded together.

141. A cushion back carpet tile comprising a carpet layer, a stabilizing layer, and a cushion back having at least one layer comprised of preformed compressible particles bonded together.

142. A carpet tile having a recycled foam content of at least 50%.

143. A carpet tile having a recycled foam content of at least 85%.

144. A method of recycling post industrial or post consumer waste foam, comprising the steps of:

reducing the foam to compressible particles having an average diameter of less than 25 mm,

mixing the particles with a prepolymer to coat the particles with prepolymer,

compressing the coated particles to a compression ratio of at least 2:1,

curing the polymer and fixing the particles in the compressed state to form a rebond foam,

and then using at least a portion of the rebond foam to form a backing or cushion of a carpet tile.

145. A method of producing a carpet tile having a carpet layer and a backing layer including at least one layer of rebond foam, comprising the steps of:

forming the backing layer, then

joining the backing layer to the carpet layer.

146. A cushion back carpet tile, comprising:

a carpet face material,

a foam layer,

and a backing layer including magnetic material.

147. The carpet tile as recited in claim 146, wherein said magnetic material is one of a sheet or strips.

148. The carpet tile as recited in claim 146, wherein said foam layer is rebond foam.

149. A backing composite for use in a surface covering such as a carpet tile, comprising:

a rebond foam layer suspended between a reinforcement layer and a backing layer.

150. The backing composite of claim 149, wherein said reinforcement layer and said backing layer are each a woven or non-woven textile material.